

Claims

[c1] What is claimed is:

1. A CT detector comprising:

a scintillator array having a plurality of scintillators;

a photodiode array having a plurality of photodiodes and configured to detect illumination of the scintillator array;

and

an optical mask disposed between the scintillator array and the photodiode array, and configured to reduce optical transference between a scintillator and a neighboring photodiode.

[c2] 2. The CT detector of claim 1 wherein the optical mask includes a grid of intersecting optical inhibitor elements.

[c3] 3. The CT detector of claim 2 wherein the grid is dimensionally equivalent to the scintillator array and the photodiode array.

[c4] 4. The CT detector of claim 1 wherein the optical mask is defined by a plurality of parallel optical inhibitor elements extending transversely along a width of the photodiode array.

- [c5] 5. The CT detector of claim 1 wherein the optical mask is formed of optical absorbing material.
- [c6] 6. The CT detector of claim 1 wherein the optical mask is formed of optical reflecting material.
- [c7] 7. The CT detector of claim 1 wherein each scintillator/photodiode combination defines a detector cell and wherein the optical mask is configured to reduce cross-talk between adjacent cells.
- [c8] 8. A CT detector comprising:
 - at least two scintillators positioned adjacently to one another;
 - at least two photodiodes, each photodiode operationally aligned to detect illumination of a respective scintillator;
 - and
 - at least one mask element disposed between the at least two scintillators and the at least two photodiodes to reduce optical transference between a scintillator and a neighboring photodiode.
- [c9] 9. The CT detector of claim 8 wherein the at least two scintillators are spaced from one another by a lateral gap.
- [c10] 10. The CT detector of claim 9 wherein each mask element has a width equal to at least a width of the lateral

gap.

- [c11] 11. The CT detector of claim 10 wherein the width of each mask element exceeds that of the width of the lateral gap.
- [c12] 12. The CT detector of claim 8 wherein the at least two scintillators are spaced from the at least two photodiodes by a vertical gap.
- [c13] 13. The CT detector of claim 12 wherein each mask element has a thickness at least equal to a height of the vertical gap.
- [c14] 14. The CT detector of claim 8 wherein the at least one mask element is fabricated of at least black polyamide.
- [c15] 15. A CT system comprising:
 - a rotatable gantry having a bore centrally disposed therein;
 - a table movable fore and aft through the bore and configured to position a subject for CT data acquisition;
 - a high frequency electromagnetic energy projection source positioned within the rotatable gantry and configured to project high frequency electromagnetic energy toward the subject; and
 - a detector array disposed within the rotatable gantry and configured to detect high frequency electromagnetic en-

ergy projected by the projection source and impinged by the subject, the detector array including:

an array of scintillators;

an array of photodiodes; and

an array of optical cross-talk inhibitors interstitially layered between the array of scintillators and the array of photodiodes.

[c16] 16. The CT system of claim 15 wherein the array of optical cross-talk inhibitors is configured to absorb light emitted by the array of scintillators.

[c17] 17. The CT system of claim 15 wherein the array of optical cross-talk inhibitors is configured to reflect light emitted by the array of scintillators.

[c18] 18. The CT system of claim 15 wherein the array of optical cross-talk inhibitors is fabricated from light absorbent silicon.

[c19] 19. The CT system of claim 15 wherein the array of optical cross-talk inhibitors is fabricated from opaque materials.

[c20] 20. A method of CT detector manufacture comprising the steps of:
providing a cellular arrangement of scintillators;
providing a cellular arrangement of photodiodes;

providing an optical cross-talk mask; and
arranging the cellular arrangement of scintillators and
the cellular arrangement of photodiodes such that the
optical cross-talk mask is sandwiched therebetween.

[c21] 21. The method of claim 20 wherein the optical cross-talk mask includes a cellular arrangement of mask elements.

[c22] 22. The method of claim 20 wherein the step of providing an optical cross-talk mask includes the step of forming a grid of light-absorbing elements.

[c23] 23. The method of claim 20 wherein the step of providing an optical cross-talk mask includes the step of forming a grid of light-reflective elements.

[c24] 24. The method of claim 20 wherein the optical cross-talk mask is formed of one of:
black polyamide;
metal;
doped silicon; and
opaque material(s).

[c25] 25. The method of claim 20 wherein the optical cross-talk mask is constructed to reduce cross-talk between a scintillator and a neighboring photodiode.